

# TALENT FOR TOMORROW

ELA Activities About Careers in Aerospace

## DEAR TEACHER,

**Continue your students' exploration of STEM careers with these high-interest nonfiction teaching materials. In this packet you'll find:**

- ✓ One lesson on pathways into the aerospace field
- ✓ Two activity sheets about building a path to a career
- ✓ Student magazine about 21st-century aerospace careers, including digital technology and cybersecurity

Visit [scholastic.com/talentfortomorrow](https://scholastic.com/talentfortomorrow) for more classroom resources.

## STUDENT MAGAZINES INCLUDED

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**Raytheon**

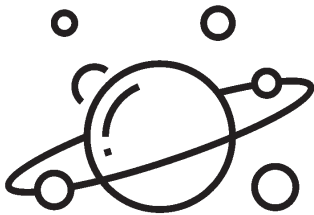


**GOAL** Students will learn how to start working toward careers within the aerospace industry.

**TIME REQUIRED**  
One class period

### MATERIALS

- ☆ Student Magazine
- ☆ Aerospace Career Paths activity sheet
- ☆ Launch Your Career activity sheet



**1 Read and discuss the “Cyber Guardian” article about aerospace careers in the student magazine.** Ask students what they think they would have to do in order to become one of the aerospace professionals who work to keep the Internet safe or who work to design, build, and operate airplanes, spacecraft, and other machines used in flight.

**2 Explain to students that just as there are many different jobs in the aerospace industry,** there are also many possible pathways to a successful career. As a class, read the Q&A with aerospace professionals on the back of the student magazine. Use the responses about the professionals’ inspiration and interests to help emphasize that it is important for students to use their own skills and hobbies as a guide to find the career that is the best fit for them. Highlight that the STEM skills, teamwork skills, etc., that students are developing right now can be the basis for a future aerospace career.

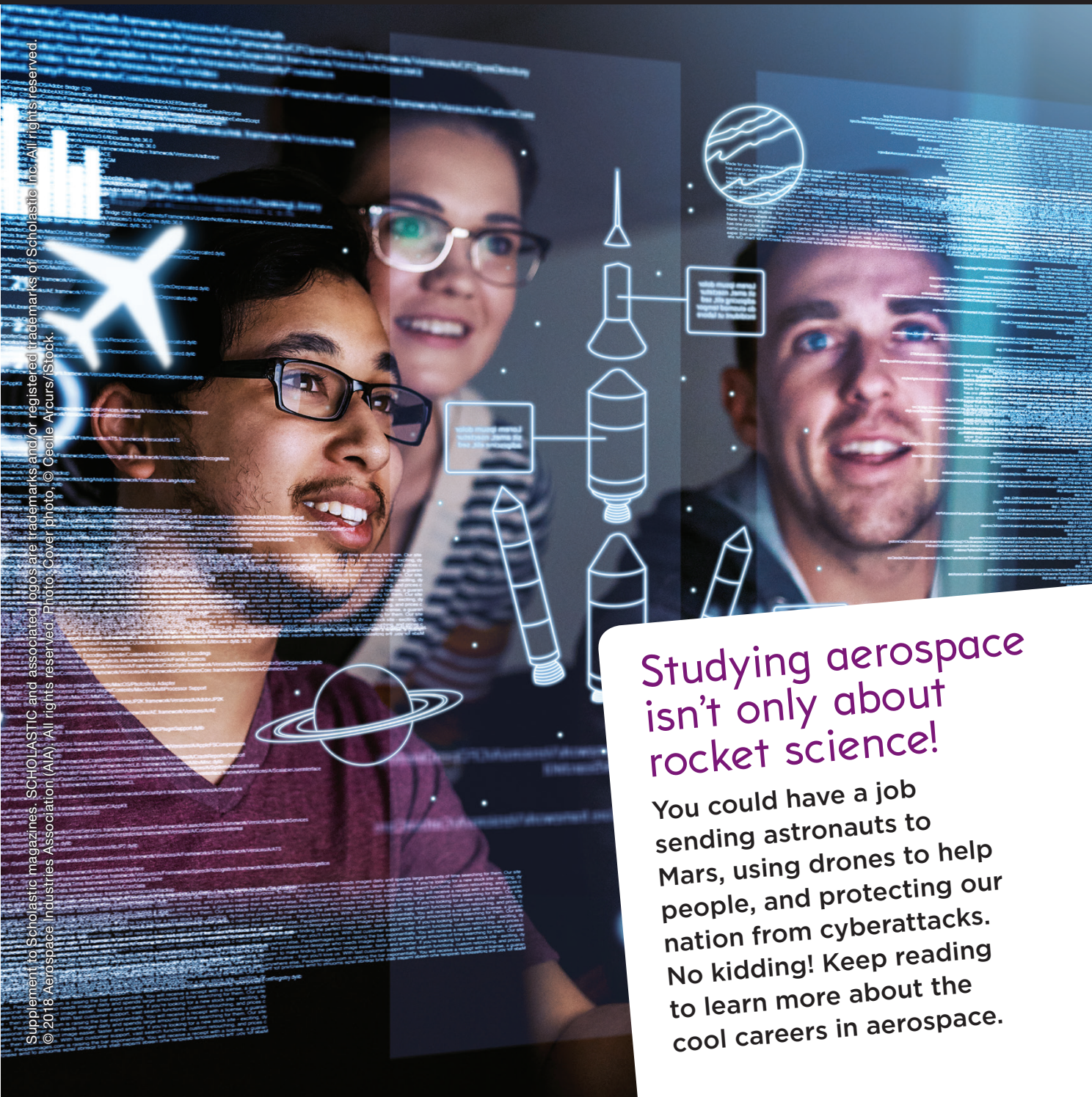
**3 Distribute copies of the Aerospace Career Paths activity sheet.** Discuss what is involved in each stage of the featured career pathways, including vocabulary that may be unfamiliar to students (e.g., *internship*, *apprenticeship*, *technical education*). Explain to students that no two paths are exactly alike. You can also help them understand that similar paths can lead to different careers, and they are not necessarily stuck on one path forever. As they complete the activity sheet, use the factors below to discuss with students how people work toward their careers and what might change their paths along the way.

- ☆ Education/skill development
- ☆ New opportunities
- ☆ Obstacles or setbacks
- ☆ Changing interests or change of focus

**4 Distribute copies of the Launch Your Career activity sheet.** Explain to students that it is their turn to brainstorm their own pathway to success. Tell them that their notes from their research project will be helpful here, but encourage them to explore more on their own if necessary to find out what they’ll need to accomplish to get their dream job. Let students know that they don’t have to focus on an aerospace career if that’s not right for them—the pathway can be filled out for any career they want!

**EXTENSION** Have students share their pathways with the class or in small groups. Did they come up with similar paths to different jobs, or different paths to the same jobs? Encourage students to learn from one another as they plan their futures, and help them understand that there is no one right answer for how to build a successful career.

# Out-Of-This-World Aerospace Careers



Studying aerospace  
isn't only about  
rocket science!

You could have a job  
sending astronauts to  
Mars, using drones to help  
people, and protecting our  
nation from cyberattacks.  
No kidding! Keep reading  
to learn more about the  
cool careers in aerospace.



COOL JOB ALERT

# CYBER GUARDIAN

If you've ever used a password to sign into a website or use social media, you've encountered cybersecurity, which is what keeps the Internet safe. Some of those safety features are created by the aerospace industry, which designs, builds, and operates airplanes, spacecraft, and other machines used in flight—and also works to keep vital aviation and space systems secure as well.

Imagine that your computer got a virus and all your assignments were deleted! That would be bad, right? Now imagine that an airline's computer system was hacked and people's flight reservations were cancelled. That would be even worse, and that is one of the things aerospace professionals are working to prevent.



**Shirali Patel** is a cybersecurity engineer at Raytheon, a company that develops solutions to make the Internet safe. Her team learns about different cyberattacks, threats, and malware (harmful software, such as viruses) that can damage digital infrastructure (mobile communications, satellite communications, and cloud computing), which can put our country at risk. Studying cyber threats helps aerospace engineers build better protective systems that keep information safe and catch cyber criminals! The aerospace profession also provides people with the opportunity to work on jets, drones, satellites and spacecraft, and even miniature robots. What common elements do projects like these have? More than you might think. They all use **artificial intelligence** (AI), which is special programming that allows computers to perform tasks that were once unique to humans, such as seeing,



## Is your TV listening?

The Internet of Things is communication that occurs when sensors in a machine perceive information (temperature changes, for example) and share it with other “smart” machines (like your TV, air conditioner, light switches, etc.) to make adjustments. Keeping the Internet of Things safe is a big task in cybersecurity.

For example, “smart speakers” use a microphone to detect voice commands (like “turn off the lights”). What if hackers could turn on smart speakers remotely? Whatever the microphone heard could be shared with someone else, and private information could be leaked outside your home. “We’re all facing increased vulnerability due to the rapidly expanding Internet of Things,” says Raytheon Chairman and CEO Dr. Thomas Kennedy, chairman of the Aerospace Industries Association (AIA). As an organization that advocates for policies to keep the aerospace and defense industries innovative and safe, the AIA and aerospace companies are constantly working to make sure the Internet of Things is as safe as possible.

**If you had a machine at home that could respond to your questions, how could you use it to improve your life?**



learning, and making decisions.

You may find AI in unexpected places. Have you ever been stuck in an airport for hours because your flight was delayed? Aerospace engineers are working to prevent that. By using AI to shorten the amount of time needed for planes to prepare for flight, these engineers are making airports more efficient and reducing delays in all flights.

Guess who will be building the AI of tomorrow? Young people in middle school math and science classes around the world are preparing to be tomorrow’s aerospace professionals. But these jobs are about so much more than technical skills. Shirali Patel, the cybersecurity engineer, says that the most important skills in the workplace are the three C’s: **communication** (translating thoughts into clear speech), **collaboration** (working as a team), and **critical thinking** (being able to work through problems and come up with unique solutions). These skills will help you become one of the aerospace leaders of tomorrow (but don’t forget to do your algebra homework, too).



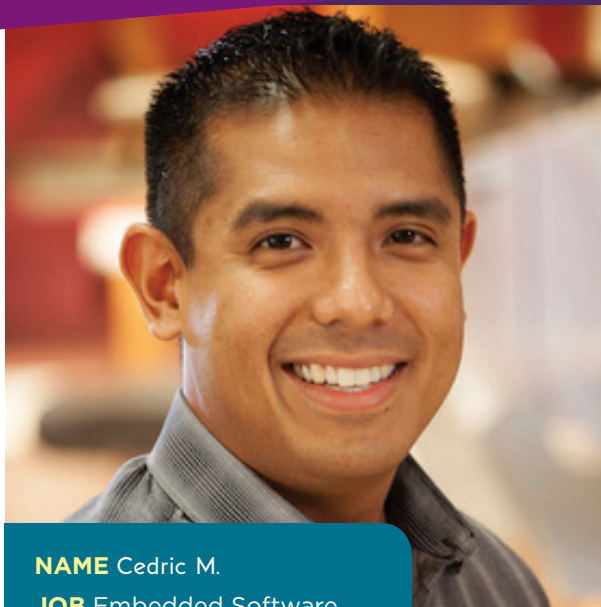
## Why Humans Are Still Smarter

Aerospace machines that use artificial intelligence (AI) can think faster than you. They can think and work faster than all humans, and that’s one of the biggest benefits of using them. But there are also things they can’t do as well as humans yet. (Whew!) Machines that use AI don’t have emotions and empathy, which can lead them to make decisions that a human might not have made. AI researchers are already working on making machines that can “feel” emotions and process information more like humans. This research will help create an effective balance in the future where machines and people can combine their skills to work faster and make the best possible decisions.

### WHAT DO YOU THINK?

Now that you’ve learned about some new ways the aerospace industry interacts with your world, consider these questions with your classmates.

- ☆ What are some potential consequences of an unprotected Internet?
- ☆ What benefits will people gain if aerospace engineers help reduce flight delays?
- ☆ How might the three C’s help a team of cybersecurity engineers face a problem such as tracking a cyber criminal?



**NAME** Cedric M.  
**JOB** Embedded Software Engineer  
**COMPANY** Raytheon

## What does Embedded Software Engineer actually mean?

I write many lines of software code to program microprocessors that do complex computations and make decisions to achieve specific tasks. You can think of a microprocessor as your brain and the software as the knowledge that your brain holds. Software is basically a set of instructions that tells a system how to make decisions and behave.

## What inspired you to join the aerospace field?

As a child, one of my favorite things to do was to take apart my broken battery-operated toys so I could figure out how they worked and try to fix them. When I took my first flight on an airplane, I was fascinated by how something so big could move so fast and fly through the air.

## What advice would you give to someone thinking about entering the aerospace industry?

If you like science, technology, engineering, and math (STEM), the aerospace industry is full of challenging problems waiting for talented students like yourselves to solve.



**NAME** Stephanie W.  
**JOB** Airplane Jet Engine Performance Engineer  
**COMPANY** Rolls-Royce

## What does being an Airplane Jet Engine Performance Engineer actually mean?

I am responsible for figuring out how the different parts of the engine work together to deliver performance. Engine performance includes the thrust and power produced for the airplane, how fast the engine spins, and the temperatures within the engine, which would melt any metal without our superefficient cooling inside the engine.

## What is your favorite thing about your work?

I love working as part of a team with members all over the world.

## What advice would you give to someone thinking about entering the aerospace industry?

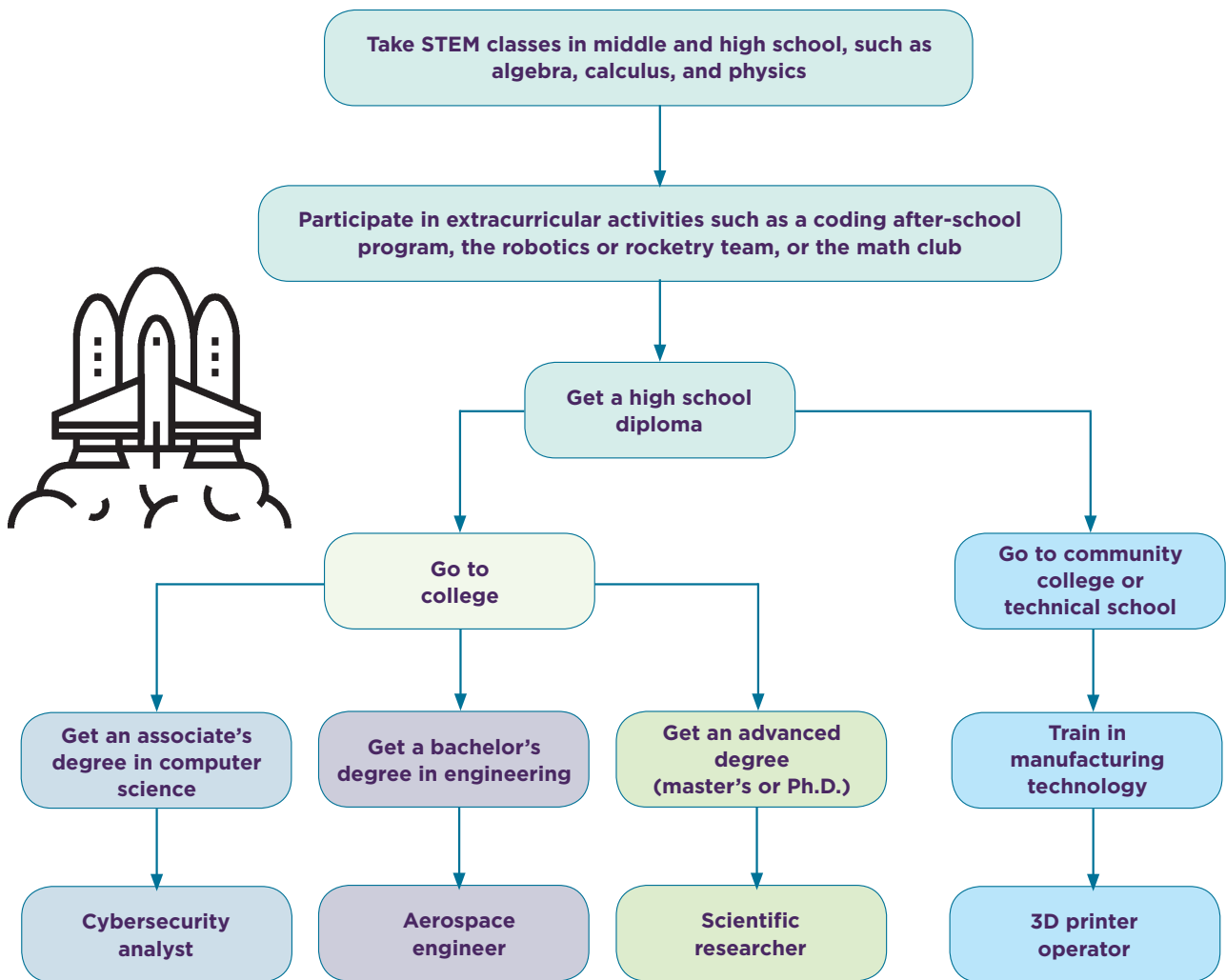
Building strong teamwork and communication skills is very important and can be practiced through middle school, high school, college, and as you start your career. Having a good foundation in science and math will help you with the problem-solving skills you need, and having a strong team-working foundation will prepare you well for a career in the aerospace industry.

Check out [scholastic.com/aeroprofiles](https://www.scholastic.com/aeroprofiles) to learn more about these and other aerospace engineers.

# AEROSPACE CAREER PATHS

Just as there are many types of jobs within the aerospace industry, there are many pathways you can take to prepare for a successful career.

**Directions:** Read the chart of four possible career paths and answer the questions below.



**Write your answers on a separate sheet of paper.**

- 1** What other pathways would lead a person to a different aerospace career, such as public affairs, marketing, graphic design, human resources, etc.?
- 2** What skills and knowledge might these professionals have in common? What skills or knowledge might be different?
- 3** What obstacles might these professionals have faced on their way to their careers?

# LAUNCH YOUR CAREER

Now it's your turn! Think about the career you want to pursue and start planning the path you need to take to get there. Reflect upon the aerospace jobs you learned about in the lessons. Pick an aerospace career that you're really interested in.

**Directions:** Using the **key steps** below as a guide, choose actions from the **toolbox** (or add your own ideas!) to fill in what you can do now and later to get started on your path.

## KEY STEPS

**Education:** Think about the classes you could take now or in high school, such as algebra, calculus, trigonometry, chemistry, or physics.

**Exploration:** Visit museums that focus on the field of your choice. Join after-school clubs, such as the rocketry or robotics teams.

**Experience:** Many aerospace companies offer tours where you learn about their career opportunities, as well as internships and apprenticeships for students or recent graduates. This is a chance to work at a real company for a while in order to learn about what they do and get real-world experience.

## TOOLBOX

- ☐ Join the \_\_\_\_\_ club
- ☐ Participate in a \_\_\_\_\_ after-school program
- ☐ Take AP classes in \_\_\_\_\_
- ☐ Take more classes in \_\_\_\_\_
- ☐ Go to college and study \_\_\_\_\_
- ☐ Visit the \_\_\_\_\_ museum
- ☐ Go to technical school and study \_\_\_\_\_
- ☐ Go to \_\_\_\_\_ summer camp
- ☐ Get an internship at \_\_\_\_\_
- ☐ Get an apprenticeship at \_\_\_\_\_
- ☐ Ask a \_\_\_\_\_ professional
- ☐ Do online research on \_\_\_\_\_

## WHAT I CAN DO NOW

## WHAT I CAN DO LATER



**Write your answers on a separate sheet of paper.**

- 1** Whom could you talk with to learn more about the aerospace industry?
- 2** What obstacles might you face on your path? How could you overcome them?